

Assignment Packet #2

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Perform the indicated operation.

1) $h(x) = 3x + 3$
Find $(h \circ h)(x)$

2) $g(a) = a^2 - 1$
 $f(a) = a - 2$
Find $(g \circ f)(a)$

3) $f(a) = 4a + 5$
 $g(a) = a^2 - 2$
Find $(f \circ g)(a)$

4) $g(a) = a + 3$
 $h(a) = 2a + 4$
Find $(g \circ h)(a)$

5) $f(x) = 2x$
 $g(x) = x^2 + 1$
Find $(f \circ g)(-5)$

6) $h(x) = 2x + 5$
 $g(x) = x^2 + 2$
Find $(h \circ g)(8)$

7) $g(n) = 4n + 5$
 $f(n) = n^2 - 4n$
Find $(g \circ f)(-5)$

8) $f(n) = -3n^2 - 2n$
 $g(n) = 4n - 3$
Find $(f \circ g)(0)$

9) $g(x) = x + 5$
 $h(x) = 4x + 2$
Find $(g \circ h)(-3x)$

10) $f(n) = n^2 + 1$
 $g(n) = 4n - 1$
Find $(f \circ g)(3x)$

11) $g(x) = x^2 + 3$
 $h(x) = 4x + 3$
Find $(g \circ h)(-1 - x)$

12) $f(x) = 4x + 2$
 $g(x) = 2x + 4$
Find $(f \circ g)(x + 3)$

Find the inverse of each function.

13) $g(x) = \frac{1}{3}x - 1$

14) $g(x) = -\frac{4}{-x + 2}$

15) $h(x) = (-x + 1)^5$

16) $g(x) = \sqrt[3]{x + 2} + 1$

State if the given functions are inverses.

17) $f(x) = \frac{-3x - 6}{2}$
 $g(x) = \frac{9x + 17}{2}$

18) $h(x) = -\frac{2}{3}x - \frac{4}{3}$
 $f(x) = \frac{16 + 3x}{4}$

$$19) f(x) = \frac{-x-1}{5}$$

$$g(x) = 2x + 2$$

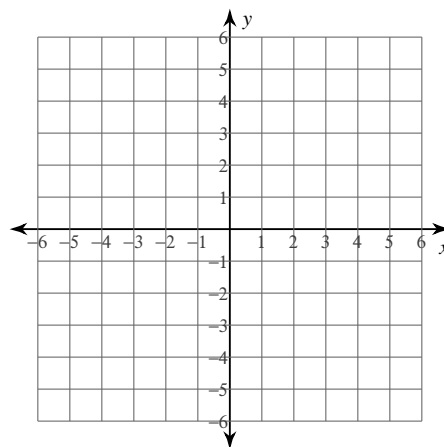
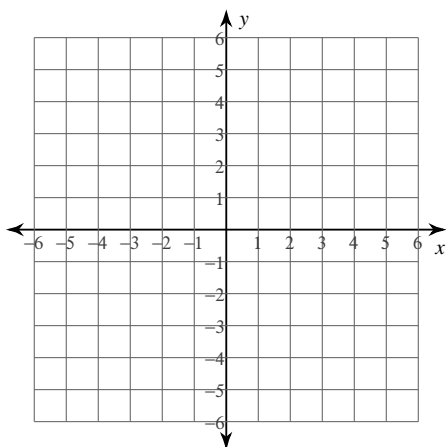
$$20) g(x) = -2 - \frac{7}{3}x$$

$$f(x) = -\frac{3}{7}x - \frac{6}{7}$$

Find the inverse of each function. Then graph the function and its inverse.

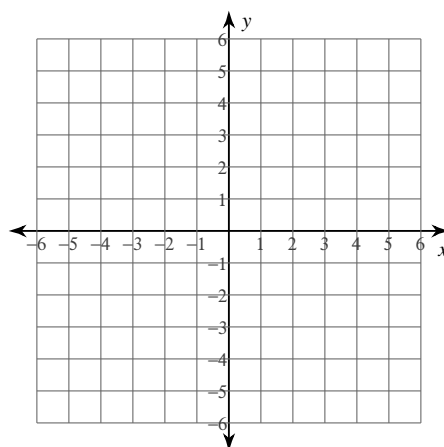
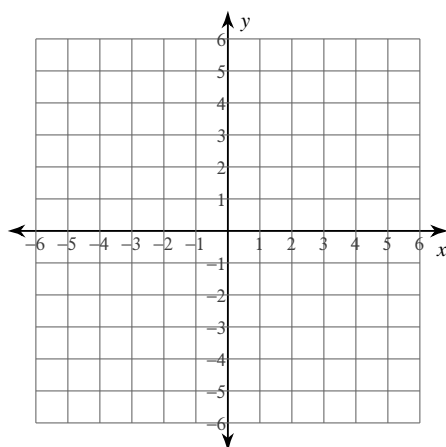
$$21) g(x) = -2 + \frac{1}{2}x$$

$$22) f(n) = \frac{-2n+8}{3}$$



$$23) f(x) = \frac{-x+5}{2}$$

$$24) h(x) = \frac{5-x}{5}$$



Find the domain of the following functions. Express answers in interval notation.

$$25) f(x) = \frac{x-6}{3x+9}$$

$$26) f(x) = \sqrt{x-12}$$

$$27) f(x) = \frac{x+2}{\sqrt{x+7}}$$

$$28) f(x) = \frac{x+6}{x^2-x-6}$$

$$29) f(x) = \sqrt{x+4} - \sqrt{x+8}$$

$$30) f(x) = \frac{x-5}{6 + \frac{3}{x-7}}$$

Find the composition $f \circ g$ and the domain of $f \circ g$

$$31) f(x) = x^2 - 5x + 2, \quad g(x) = x + 4$$

$$32) f(x) = \sqrt{x+6}, \quad g(x) = x - 8$$

$$33) f(x) = x^2 + 5, \quad g(x) = \sqrt{x+7}$$

$$34) f(x) = \frac{9}{4-x}, \quad g(x) = \frac{1}{x+2}$$

Decompose the following functions so that $h(x) = (f \circ g)(x)$

35) $h(x) = \sqrt[4]{2x^3 - 1}$

36) $h(x) = \frac{7}{4x^3 + 1}$

37) $h(x) = |9 - 7x|$

38) $h(x) = (x - 6)^2 + 8$

Find all values of x .

39) $f(x) = x^2 + 4x$, $g(x) = x - 5$, $f \circ g = 12$

40) $f(x) = x^2 - 5x + 1$, $g(x) = 2x - 11$,
 $g \circ f = 19$

41) The head circumference C of a child is related to the height H of a child (both in inches) by the function:
 $H(C) = 21.5C - 10.53$

- Express the head circumference C as a function of height H .
- Verify that $C = C(H)$ is the inverse of $H = H(C)$ by showing that $H(C(H)) = H$ and $C(H(C)) = C$.
- Predict the head circumference of a child who is 2 feet 2 inches tall.